In The Claims

1.   (Original)   A method for emulating a surface electrocardiogram (EKG) of a patient in which an implantable cardiac stimulation device is implanted, the method comprising:

sensing a cross-chamber cardiac signal using an atrial electrode and a ventricular electrode;

distinguishing portions of the cross-chamber cardiac signal corresponding to atrial signals from those corresponding to ventricular signals; and

adjusting the relative amplitudes of the portions of the cross-chamber cardiac signal corresponding to atrial signals and the portions corresponding to ventricular signals so as to yield an emulated surface EKG.

2.   (Original)   The method of claim 1 wherein adjusting the relative magnitudes of the portions of the cross-chamber cardiac signal is performed to yield a predetermined ratio of atrial peak signal amplitude to ventricular peak signal amplitude.

3.   (Original)   The method of claim 2 wherein the predetermined ratio is in the range of 1:4 to 1:10.

4.   (Original)   The method of claim 1 wherein distinguishing portions of the cross-chamber cardiac signal corresponding to atrial signals from those corresponding to ventricular signals comprises identifying transition points between atrial signals and ventricular signals within the cross-chamber cardiac signal.

5.   (Original)   The method of claim 4 wherein identifying transition points between atrial signals and ventricular signals comprises:

identifying a pair of ventricular depolarization and repolarization events within the cross-chamber cardiac signal;

scanning the cross-chamber cardiac signal prior to the ventricular depolarization event to find a baseline point to serve as a first transition point; and

scanning signals sensed following the ventricular repolarization event to find a nearest baseline point to serve as a second transition point.

6.   (Original)   The method of claim 4 wherein identifying transition points between atrial signals and ventricular signals comprises:

identifying a pair of ventricular depolarization and repolarization events within the cross-chamber cardiac signal;

scanning the cross-chamber cardiac signal prior to the ventricular depolarization event to find a baseline point to serve as a first transition point;

determining the R-R interval for the immediately preceding heart beat;

calculating a time delay value based on the R-R interval using a programmable factor; and

identifying a second baseline point based upon the time-delay value and the ventricular depolarization event.

7.   (Original)   The method of claim 1 further comprising controlling device functions based, in part, on the emulated surface EKG.

8.   (Original)   The method of claim 1 performed entirely by the implantable medical device.

9.   (Original)   The method of claim 1 performed by the implantable medical device in combination with a device external to the patient and further comprising transmitting the cross-chamber cardiac signal to the external device and wherein the steps of distinguishing portions of the cross-chamber cardiac signal and adjusting the relative amplitudes of the portions of the cross-chamber cardiac signal so as to yield an emulated surface EKG is performed by the external device.

10.   (Currently Amended)   The method of claim 1 wherein the atrial electrode is selected from the [[following]] group consisting of: right atrial (RA) tip, RA ring, superior vena cava (SVC) coil, left atrial (LV) ring and LV coil and wherein the

ventricular electrode is selected from the following group: right ventricular (RV) tip, RV ring, RV coil, left ventricular (LV) ring.

11.   (Currently Amended)   A system for emulating a surface electrocardiogram (EKG) of a patient in which the device is implanted, the system comprising:

sensing circuitry operative to sense a cross-chamber cardiac signal ~~using an atrial electrode and a ventricular electrode~~; and

an EKG emulation unit operative to distinguish portions of the cross-chamber cardiac signal corresponding to atrial signals from those corresponding to ventricular signals and to adjust the relative amplitudes of the portions of the cross-chamber cardiac signal corresponding to atrial signals and the portions corresponding to ventricular signals so as to yield an emulated surface EKG.

12.   (Currently Amended)   A system for emulating a surface electrocardiogram (EKG) of a patient in which the device is implanted, the system comprising:

means for sensing a cross-chamber cardiac signal ~~using an atrial electrode and a ventricular electrode~~;

means for distinguishing portions of the cross-chamber cardiac signal corresponding to atrial signals from those corresponding to ventricular signals; and

means for adjusting the relative amplitudes of the portions of the cross-chamber cardiac signal corresponding to atrial signals and the portions corresponding to ventricular signals so as to yield an emulated surface EKG.